

Scientific Note

DISCOVERY OF THE GALL MITE *ACERIA GENISTAE* (NALEPA) (ACARINA: ERIOPHYIDAE) ON GORSE AND FRENCH BROOM IN THE UNITED STATES

Gorse (*Ulex europaeus* L.) and French broom (*Genista monspessulana* [L.] L. Johnson) are noxious and invasive leguminous shrubs native to western and Mediterranean Europe respectively (Hickman, J. C. [ed.] 1993. *The Jepson manual: higher plants of California*. Univ. California Press, Berkeley, California). Having escaped from cultivation, they are weeds of disturbed sites in the coastal Pacific Northwest region from the San Francisco Bay Area to Washington and British Columbia, and in higher elevation sites in Maui, Hawaii and Kauai (Haselwood, E. L., G. G. Motter & R. T. Hirano (eds.). 1983. *Handbook of Hawaiian weeds* [2nd ed.]. Univ. Hawaii Press, Honolulu, Hawaii; Markin, G. P., E. R. Yoshioka & R. E. Brown. 1995. Chap. 78. *In Biological control in the western United States*. Univ. California DANR Publ. 3361, Oakland, California). Although biological control programs have purposely reunited gorse with two European natural enemies (*Apion ulicis* [Forster] [Coleoptera: Apionidae] and *Tetranychus lintearius* Dufour [Acarina: Tetranychidae]) in the continental United States (Rees, N. E., P. C. Quimby, Jr., G. L. Piper, E. M. Coombs, C. E. Turner, N. R. Spencer & L. V. Knutson. 1996. *Biological control of weeds in the west*. Western Society of Weed Science, Bozeman, Montana), we report here the detection of an accidentally introduced European gall mite, *Aceria genistae* (Nalepa) (Acarina: Eriophyidae), on both gorse and French broom in the San Francisco Bay Area.

In late October 1994 we transplanted gorse seedlings from a vacant lot in Daly City to our greenhouse in Albany, California. By mid-Jan 1995 several plants exhibited abnormal growth: continued production of juvenile leaves and stunted shoot tips with reduced, thickened scale leaves or even clublike apices. Examination of the shoot tips revealed colonies of eriophyoid mites living among the appressed leaves. These mites were subsequently determined by James W. Amrine, Jr. of West Virginia University as *Aceria genistae* (Nalepa), originally described from scotch broom (*Sarothamnus scoparius* Koch. [= *Cytisus scoparius* (L.) Link]) in Lorraine, France. We collected shoots of gorse and French broom from the Daly City field site on 18 Apr 1996 and 14 May 1996. Presence of the same mite species on seedlings of both legumes confirmed that the mites living on our gorse in Albany had originated from Daly City. It is unknown how or when the mites arrived in California. This is the first field record of *A. genistae* in the United States.

In Europe, *Aceria genistae* has been recorded from two species of *Cytisus* (including *C. scoparius* [scotch broom]), four species of *Genista* (but not *G. monspessulana*) and two species of *Ulex* (including *U. europaeus*) (Baker, E. W., T. Kono, J. W. Amrine, Jr., M. Delfinado-Baker & T. A. Stasny. 1996. *Eriophyoid mites of the United States*. Indira Publishing House, West Bloomfield, Michigan). Its native range includes Great Britain, Spain, Italy and Central Europe, and it has been reported on *U. europaeus* in New Zealand where gorse is also a natu-

ralized weed (Manson, D. C. M. 1989. *New Zealand J. Zool.*, 16: 37–49). Females are 165–225 μm long and apparently do not have a deuterozyne stage (Castagnoli, M. 1978. *Redia*, 61: 539–550). Recent descriptions and figures may be found in Castagnoli (1978) and Baker et al. (1996). Castagnoli (1978) reports that in Italy, *A. genistae* produces several generations throughout spring and summer on scotch broom, and causes glomerule-like galls on stem bud tissue.

We observed that the mite prefers young, soft, pubescent foliage on gorse and French broom. We now see mites on the new growth of mature gorse plants in the shadehouse into which we moved our original gorse transplants. The colonies have persisted without killing or further deforming the plants. However, the naturally occurring mite predators present in the shadehouse may be preventing the eriophyoids from causing appreciable damage. Perhaps feeding by the mites under protected, warm and humid greenhouse conditions produced the unusual morphology that we initially saw.

The mite's damage to gorse and French broom in Daly City appears to be negligible and is often inconspicuous. Based on our observations in the San Francisco Bay Area, we do not anticipate that *A. genistae* will play a substantial role in the biological control of either gorse or French broom. Rather, the eriophyoid joins a suite of unintentionally introduced European broom and gorse feeders (Waloff, N. 1966. *J. Appl. Ecol.* 3: 293–311; Andres, L. & E. Coombs. 1995. Chap. 79. *In Biological control in the western United States*. Univ. California DANR Publ. 3361, Oakland, California; Markin et al. 1995). To date, these arthropods have not curbed scotch broom, French broom or gorse populations in the Pacific Northwest. However, a European mite collected from scotch broom and identified as *A. genistae* is currently under consideration as a potential biological control agent of scotch broom in New Zealand and Australia (G. P. Markin, personal communication). Preliminary host range tests in Europe indicate that this mite may cause galling only on *C. scoparius*, but further testing is needed to determine if gorse or French broom are not suitable hosts also (Q. Paynter, personal communication). Interestingly, the *A. genistae* reported on gorse in New Zealand has not been found on scotch broom there and did not transfer successfully from gorse to scotch broom in a laboratory experiment (P. Syrett, personal communication). Scotch broom is not present at our Daly City field site, so we cannot comment on the suitability of scotch broom as a host for the *A. genistae* we found in California. These incongruent host associations suggest that further taxonomic work is needed to determine if *A. genistae* is actually a complex of sibling species. Castagnoli (1978) has already reaffirmed the validity of *A. spartii* (G. Canestrini) as a separate species rather than a synonym of *A. genistae*, based on morphological differences and *A. spartii*'s specificity to *Spartium junceum* L. We intend to survey scotch broom and other gorse and French broom populations in California for eriophyoids. Additional collection records should help solve this taxonomic puzzle.

Records.—CALIFORNIA. ALAMEDA Co.: Albany, 1 Feb 1995, K. L. Chan, *Ulex europaeus*, shoot tips. SAN MATEO Co.: Daly City, 14 May 1996, K. L. Chan, *Genista monspessulana*, shoot tips.

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